Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

**AP Chemistry Problem Set**

**Chapter 1: Matter and Measurement**

1. Which of the following describe a chemical change, and which a physical change?
   1. Sheep are sheared and the wool is spun into yarn.
   2. A cake is baked from a mixture of flour, baking powder, sugar, eggs, shortening, and milk.
   3. Milk turns sour when left out of the refrigerator for many hours.
   4. Silkworms feed on mulberry leaves and produce silk.
   5. An overgrown lawn is manicured by mowing it with a lawn mower.
2. Which of the following mixtures are homogeneous and which are heterogeneous?
   1. Gasoline
   2. Raisin pudding
   3. Italian salad dressing
   4. A cola drink
3. All the following are characteristic properties of phosphorus. Which one is a chemical property?
   1. Both red phosphorus and white phosphorus exist in solid allotropic forms.
   2. The red form melts at about 600°C and the white form melts at 44°C.
   3. The white form is soluble in liquid carbon disulfide, but is insoluble in water.
   4. When exposed to air, white phosphorus will burn spontaneously, but red phosphorus will not.
4. Classify each observation as a physical or a chemical property and tally them.

Observation 1: Bubbles form on a piece of metal when it is dropped into acid.

Observation 2: The color of a crystalline substance is yellow.

Observation 3: A shiny metal melts at 650°C.

Observation 4: The density of a solution is 1.84 g/cm3

* + 1. 2 chemical properties and 2 physical properties
    2. 3 chemical properties and 1 physical properties.
    3. 1 chemical properties and 3 physical properties
    4. 4 chemical properties
    5. 4 physical properties

1. Chromatography is a good way to separate the
   1. elements in a compound
   2. the components in a mixture
   3. the atoms in an element
   4. the phases of a pure substance
2. When a pure solid substance was heated, a student obtained another solid and a gas, each of which was a pure substance. From this information which of the following statements is ALWAYS a correct conclusion?
   1. The original solid is not an element.
   2. Both products are elements.
   3. The original solid is a compound and the gas is an element.
   4. The original solid is an element and the gas is a compound.
3. A solution of sugar water may be defined as a
   1. heterogeneous mixture
   2. homogeneous mixture
   3. heterogeneous compound
   4. homogeneous compound
   5. homogeneous element
4. Identify each of the following as a physical or chemical change.

|  |  |  |  |
| --- | --- | --- | --- |
|  | A piece of wood burns to form ash |  | A piece of apple rots on the ground |
|  | Baking soda mixed with vinegar to form bubbles |  | A plant turns sunlight, carbon dioxide, and water into sugar and oxygen |
|  | You cut your hair |  | Water freezes to form ice |
|  | Copper turns green when exposed to the environment |  | Two clear liquids produce a cloudy yellow precipitate when mixed |
|  | A piece of metal is bent in half |  | Eggs turn into an omelet |
|  | An aspirin is crushed into a fine powder |  | A popsicle melts |
|  | Water evaporates into steam |  | Dew forms on grass in the early morning |
|  | Hydrochloric acid reacts with acid and bubbles |  | Diamonds are used to scratch glass |
|  | Old ham goes bad in the refrigerator |  | Meat blackens when cooked too long on the grill |
|  | A piece of paper is crumpled up |  | Spilling acid on cotton jeans creates a hole in them |

1. Identify as an element, compound, heterogeneous mixture, or homogenous mixture (solution).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Air |  | Wood |
|  | Manganese (Mn) |  | Apple pie |
|  | A teaspoon of sugar |  | Gold (Au) |
|  | Salad dressing |  | Milk |
|  | Muddy water |  | Sugar dissolved in water |
|  | Brass |  | Aluminum foil |
|  | CuSO4 |  | Carbon dioxide |